

**PROSPECTUS:**  
**PROPOSED MITIGATION BANK ON MOSSY CREEK**

**For**

**ERNIE REEVES**

**MT. SOLON, VA**

**May 1, 2008**

***Environmental Innovations and Logistics***




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**For: Ernie Reeves  
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**March 15, 2008**

  
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## **Initial Review Check List (Appendix B)**

### **STEP ONE – INITIAL REVIEW**

1. Aerial photograph of the project site. **Included.**
2. Preliminary wetland data:
  - a. NRCS soil map: **Included**
  - b. U.S.G.S. quad: **Included**
  - c. National Wetlands Inventory: **Included**
  - d. HUC map: **Included**
3. Total acreage of the site (including upland buffers and upland inclusions).  
Estimated wetland acreage: **Included**
4. Show any streams on the site. Give current condition and projected restoration and/or enhancement. Give types/linear feet of streams on site. **Included in following discussion**
5. A discussion of the current ecological conditions: Existing vegetative community types and target native community types. **Included in following discussion**
6. A discussion of current land use at site and surrounding areas. Show on a map the land uses surrounding the project site. Discuss reasonable expected development for the site (if bank activities were not implemented) and the surrounding area. **Included in following discussion**
7. Describe how the mitigation will be accomplished. **Included in following discussion**
8. Discuss the proposed ecological conditions under the with and without-bank scenarios, and how the difference will be quantified. **Included in following discussion**
9. Narrative overview of the project describing how the resulting increase in ecological value at the site will improve conditions in the regional watershed (or proposed mitigation service area). **Included in following discussion**
10. Address if the bank may affect or be affected by a public project. **Included in following discussion**
11. A discussion of any known existing or potential historic or archeological resources on or near the site. **Included in following discussion**
12. A discussion of any known existing (State or Federal level) Threatened or Endangered Species or their critical habitat near the site. **Included in following discussion**
13. A discussion of what interest in the property is currently held and will be maintained. **Included in following discussion**
14. If known, the proposed Mitigation Service Area and rationale. **Included in following discussion**

## INITIAL REVIEW

1. The following document is a Prospectus that will describe in detail the existing conditions, restoration, design, and legal status of a proposed Mitigation Bank to be located on a farm tract in Augusta County, VA. (Figures 1 and 2) The location of this tract Number 3245-7459 is shown in the aerial photograph (Figure 3).
2. The proposed mitigation bank site is shown on the NRCS soil map as Figure 4 and the USGS Parnassus, Virginia quadrangle as Figure 5. The proposed bank site is outlined on the National Wetlands Inventory Map (Figure 6) and the more detailed WetLand.com map (Figure 7). The tract is located in the Hydrologic Unit HUC 02070005, the South Fork of the Shenandoah River (Figure 8).

In the following document, all measurements are approximate. Until the wetlands and streams are surveyed for a U. S. Army Corps of Engineers (CE) confirmed delineation, all measurements have been determined from the various maps shown in the Figures.

3. Tract 3245-7459 is shown in its entirety on the USDA map, Figure 4. and the USGS Parnassus, Virginia Quadrangle in Figure 5. The site is located at  $38^{\circ} 20' 47''$  N and  $79^{\circ} 3' 35''$  W ( $38.3465219^{\circ}$  N  $79.0597818^{\circ}$  W). The landowner proposes developing a mitigation bank in the area along Mossy Creek and its tributaries shown in Figures 10 and 11. The area indicated is approximately 40 acres of the approximately 200-acre farm tract. The proposed mitigation bank portion contains approximately 7,140-lf of Mossy Creek, 2,900-lf of unnamed 1<sup>st</sup> order tributaries of Mossy Creek and 32.3 acres of PEM and PEMA1 wetlands currently in agricultural use as a pasture (Plates 1-4). Cattle have already been excluded from portions of the Mossy Creek streambed proper as part of the Total Maximum Daily Load (TMDL) reduction plan discussed in section 4 (b) below.

4. The streams on the proposed mitigation bank site are the following:

(a) Unnamed tributary of Mossy Creek, a 2,900-lf, 8.148-acre, 1<sup>st</sup> order tributary  
Current Condition: broken concrete rubble, cattle disturbance, spring box no longer there, channel to Mossy Creek is gone (Plate 5).

Restoration Plans: Replace spring box, restore channel to Mossy Creek, remove accumulated sediment and rubble, backfill any drainage ditches, and re-establish native vegetation (Plates 6-7).

(b) Mossy Creek, non-navigable relatively permanent water  
Current Conditions: Mossy Creek and its unnamed tributaries are the predominant component of the mitigation bank development (Plates 1-4 ). The DGIF considers Mossy Creek to be "a classic, meadow, limestone stream averaging about 15 feet in width and flowing through open pastures". This is also designated a "Trophy Trout Stream by DGIF". It is also considered to be Virginia's best-known spring creek. The DGIF considers Mossy Creek to be special: "There is no other creek in the state that has the flow and quality of water that Mossy has and still remains open to the public" with access allowed by landowners on request via the DGIF (Plate 8). Simultaneously the Virginia Department of Environmental Quality (DEQ) designated the entire 9.65 miles of Mossy Creek as a Category 5A Impaired Water in 2004 in coordination with the U. S.

Environmental Protection Agency (EPA). The impairment was the result of non-point source (NPS) fecal coliform violations during the 1998, 2000, 2002 and 2004 DEQ assessment cycles. The stream was relisted as Category 4A Impaired in 2006 as a TMDL developed for the specific pollutant is complete and EPA approved. There are no data concerning the presence of toxic heavy metals, and/or organic toxic, carcinogenic, mutagenic and teratogenic compounds originating as NPS highway and agricultural runoff. DEQ fish sampling in the Shenandoah River in 2005 did not include Mossy Creek, therefore the presence or absence of contaminants in the local brown trout has not been documented.

**Restoration Plans:** Removal of accumulated sediment, removal of invasive plants and Eurasian grasses, placement of in-stream habitat to create trout spawning areas, add riffle pools, vegetate riparian areas to cool the water with trees and shrubs, re-establish animal/bird habitat, plant native grasses to reduce erosion, re-slope banks where necessary, and restrict livestock in the riparian and buffer areas by fencing.

A single fenced crossing will be retained at the existing bridge location to allow cattle and farm equipment to move from one grazing area to another (Plate 9).

The development of the proposed mitigation bank on the portions of Mossy Creek within the farm Tract will contribute significantly to the preservation of this valuable stream. Buffer improvements and improvement of the bordering wetlands will contribute to TMDL reduction and attainment of improved EPA/DEQ Clean Water Act impairment listing of Mossy Creek

5. The existing vegetative community is a mixture of Eurasian pasture grasses with a few relics of the native flora (Plate 10).

The following are general comments that apply to the rationale of vegetation development during the restoration and enhancement of both Mossy Creek and the unnamed heavily impacted tributary. The specific design parameters for each proposed tract will be discussed individually, however the general restoration goals are common to both.

The goal of the restoration of the stream bank and wetland vegetation within the proposed mitigation bank is to approach presettlement floristics as closely as possible. Target species are to be “the historic vegetative community” (Appendix B: Initial Review Check List). The “historic vegetative community” to be developed along the banks of Mossy Creek, North River and the tributaries on the site will depend on the definition of “historic”. The area has been farmed since the settlement by the Scotch-Irish in the mid 1700’s and most native floristic components prior to that time have been lost.

The definition of “historic” will then determine the management plan to be employed within the mitigation bank streams and wetlands. If we select the immediate post-Pleistocene of 9500-9000 BC as humans first appeared in the Shenandoah Valley when the climate was cooler, with longer winters and shorter summers than today, wetland species, currently accepted as desirable, may not survive. Selection of the immediate pre-colonial ecosystems of 1607 in the Shenandoah Valley would require restoration of a portion of the vast grass prairie which covered more than 1000 square miles. Native Americans burned the area frequently and the prairie would mostly have disappeared if it

had not been for the nearly annual burning of the grasslands by the North American Indians. This restoration would require persistent fire management.

The *Flora Virginica* published by Gronovius from specimens supplied by John Clayton is a partial record of historic species and is the current Flora of Virginia. This list of species also required fire management.

Another alternative is to apply the Virginia Wetland Plant CV list developed for but not currently applied for Floral Quality Index (FQI) calculations of Coefficients of Conservatism or C-Values. The appropriate C-Values do not exist for upland plants in buffer areas but these do exist for other states and could be applied. The FQI is based on the specificity of the plants ecological niche and generally in a prairie/savannah ecosystem again may require fire management.

We propose a development of additional palustrine forested (PFO1A and PFO1B) palustrine emergent (PEM), and palustrine emergent shrub-scrub (PSS) along buffer areas, with open forest as described by the early settlers along the dryer edge. Evaluation of the various ecosystems in the restored wetland/stream/buffer ecosystems will be made by FQI calculations. As the restoration continues to develop the FQI numbers should become larger as more unique vegetation niches will develop as colonizing plants survive.

6. The land is in agricultural useage at present (Figure 11). The adjacent portions of this farm and the adjacent farms are used for general agriculture. The primary activities are corn, hay and grazing. The fields adjacent to the proposed bank site are corn, and pasture for dairy farm and beef cattle production. Without the implementation of a Mitigation Bank Instrument the land use would remain agricultural in corn, assorted row crops and pasture. The surrounding areas would remain agricultural.

7. The mitigation projects planned are shown in Figure 12. They include the following activities listed below.

(a) Removal of the rubble and accumulated sediment and restore the channel for the unnamed tributary to Mossy Creek. We will need to use a backhoe, manual labor and tractor.

(b) We will need to disc the buffer area and plant native grasses in the buffer and riparian areas with a tractor.

(c) Types of Mitigation proposed:

RESTORATION: 80%

ENHANCEMENT : 15 %

CREATION: 0

PRESERVATION: 05%

8. The proposed ecological conditions with and without bank approval are the following.

(a) WITH: Wetland areas will be planted with native plantings and the livestock restricted.

WITHOUT: Wetland areas will remain disturbed.

(b)WITH: Unnamed tributary of Mossy Creek will be restored to connect with Mossy Creek, native plants planted, cattle removed, and spring box replaced.

WITHOUT: Channel will remain disturbed by rubble and accumulated sediment, cattle will remain, and the site will remain un-vegetated.

(c) WITH: Buffer areas will be planted with native grasses to replace the Eurasian grasses, trees planted, cattle removed.

WITHOUT: The livestock will remain, Eurasian grasses remain, no trees will be planted, and erosion and contaminated runoff into Mossy Creek remains.

(d) WITH: Mossy Creek will attain better water quality, encourage trout spawning areas, and halt the need for twice-yearly fingerling stocking, cool the water, and remove invasive vegetation.

WITHOUT: Mossy Creek will remain a VADEQ listed Category 4 impaired stream, and accumulate more sediment.

9. This is a narrative overview of increase of ecological value in the regional watershed. Mossy Creek flows near the Washington National Forest and the Shenandoah National Park at the southern end of the Shenandoah Valley. Mossy Creek at present is stocked with fingerling trout twice a year. This segment of Mossy Creek begins at Mt. Solon, Virginia. Improving this section will improve water quality by filtering run-off, decrease erosion, and provide a better habitat for trout, provide habitat for animal life in and out of the Creek.

10. This is an agricultural area, and there are no planned public projects at present (May, 2008) and there are not likely to be any in the reasonable future.

11. The family home is eligible for historic registry and is located within site of the proposed bank (Plate 11). Mossy Creek Presbyterian Church is also eligible and is located several miles east/northeast of the site. The railroad grade no longer has tracks (Plate 12). Please see the attached listing.

12. There are no known threatened or endangered species on the site. Please see the attached listing. We hope to provide improved habitat for such.

13. The property is a family corporation and is held in simple ownership.  
Public Lands: Trout fishing is allowed by the private owner through permitting by DGIF in Verona, Virginia.

14. Proposed Mitigation Service Area and rational. The HUC 02070005 map is included as Figure 8. There is only one other Mitigation Bank in this watershed. The Harrisonburg, VA area is one of the fastest growing areas in the state due to the continual expansion of student housing required by the growth of James Madison University. This HUC is the South Fork of the Shenandoah River Watershed and covers 1660 square miles.